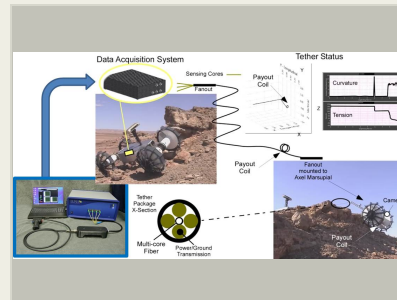
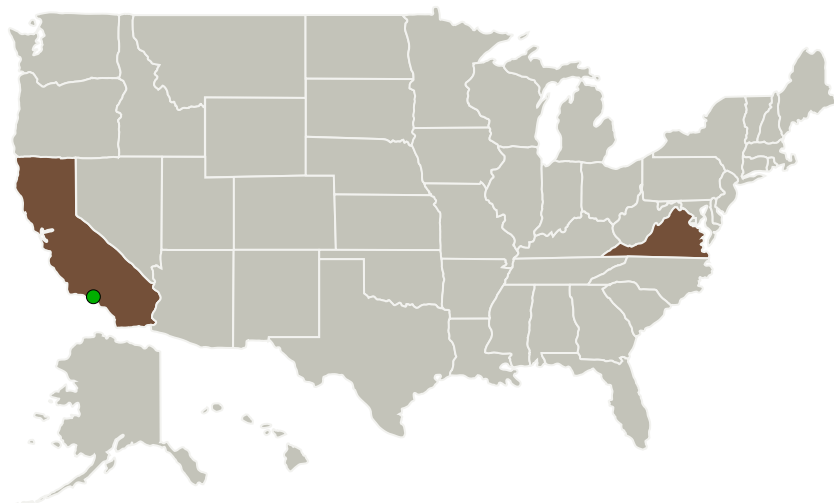




Project Introduction

Luna proposes to continue development of its marsupial rover sensing tether (MaRS Tether) technology by miniaturizing the sensor's interrogation system. Luna is currently engaged in a Phase II SBIR with NASA JPL (contract NNX13CP33P) to develop a revolutionary technology that monitors the distributed tension, curvature, and path of a tether that connects a marsupial rover robot to its base station. This sensing tether turns a passive cable that provides power and communication into a powerful tool that provides information about the health and state of both the rover and the tether, alerting the base station to possible pinch points, snagged cables, or high tension due to poor traction or steep slope encountered by the rover. Luna proposes to miniaturize the interrogation system of the MaRS Tether to enable JPL to realize the full potential of the rover. Reducing the size, weight, and power (SWaP) of the tether system will allow the rover to be tested in multiple realistic scenarios. In addition, miniaturization is the first step in preparing the entire sensing tether system for flight-readiness for missions to Mars, asteroids, and the rest of the Solar System.

Primary U.S. Work Locations and Key Partners



Miniaturized Interrogation System for Marsupial Rover Sensing Tether, Phase I

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Miniaturized Interrogation System for Marsupial Rover Sensing Tether, Phase I

Completed Technology Project (2016 - 2016)



Organizations Performing Work	Role	Type	Location
Luna Innovations, Inc.	Lead Organization	Industry	Roanoke, Virginia
● Jet Propulsion Laboratory(JPL)	Supporting Organization	NASA Center	Pasadena, California

Primary U.S. Work Locations

California	Virginia
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Project Transitions

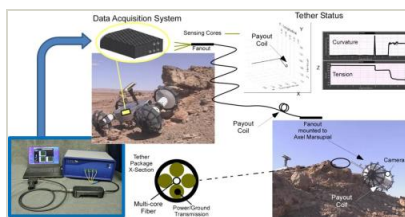
▶ **June 2016:** Project Start

✓ **December 2016:** Closed out

Closeout Documentation:

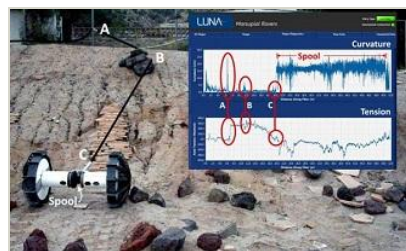
- Final Summary Chart(<https://techport.nasa.gov/file/139577>)

Images



Briefing Chart Image

Miniaturized Interrogation System for Marsupial Rover Sensing Tether, Phase I
(<https://techport.nasa.gov/image/129824>)



Final Summary Chart Image

Miniaturized Interrogation System for Marsupial Rover Sensing Tether, Phase I Project Image
(<https://techport.nasa.gov/image/137075>)

Organizational Responsibility

Responsible Mission Directorate:

Space Technology Mission Directorate (STMD)

Lead Organization:

Luna Innovations, Inc.

Responsible Program:

Small Business Innovation Research/Small Business Tech Transfer

Project Management

Program Director:

Jason L Kessler

Program Manager:

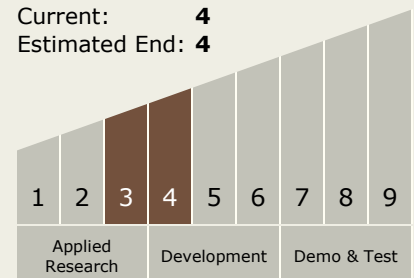
Carlos Torrez

Principal Investigator:

Daniel Kominsky

Technology Maturity (TRL)

Start: 3
Current: 4
Estimated End: 4



Miniaturized Interrogation System for Marsupial Rover Sensing Tether, Phase I

Completed Technology Project (2016 - 2016)



Technology Areas

Primary:

- TX04 Robotic Systems
 - └ TX04.2 Mobility
 - └ TX04.2.6 Collaborative Mobility

Target Destinations

The Sun, Earth, The Moon, Mars, Others Inside the Solar System, Outside the Solar System